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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,953	08/21/2003	Takayuki Araki	Q76963	6799

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
HU, HENRY S	

ART UNIT	PAPER NUMBER
1713	

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/644,953	ARAKI ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment of April 26, 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *3,4,6,8 and 11-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,7,9 and 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to **Amendment** filed on April 26, 2006. With the Applicants' amendment, only specification was amended, while no claim was amended, cancelled or added. To be more specific, the Applicants have only made correction on the improper wording and/or chemical structure as pointed out by the examiner. The examiner thereby withdraws specification objection in the previous Office Action dated January 26, 2006.

2. As discussed earlier, the Applicants' election is **without traverse** on Claims 1, 7 and 9-10 (as generic claims in **Group I**) along with species Claims 2 and 5 by **electing Species (2) for a = 1; $X^1 = X^2 = H$, $X^3 = F$** (Claims 1-2, 5, 7 and 9-10 are thereby elected). **Claims 1-25 are now pending** with a total of **thirteen independent claims** **(Claims, 1-6, 9, 11-15 and 17)**, while Claims 3-4, 6, 8 and 11-25 are withdrawn from consideration. An action follows.

Response to Argument

3. Applicant's argument filed on April 26, 2006 has been fully considered but they are not persuasive. The focal arguments related to the patentability will be addressed as follows: In view of the Applicants' argument on Remarks, pure 103 rejections by Adelman or Inomata, each individually in view of Araki are both sustained after a close examination.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. *The limitation of parent* ***Claim 1*** *in present invention relates to* ***a fluorine-containing ethylenic monomer having hydroxyl group*** *represented by the formula* ***(1a)****:*

$CX^1X^2=CX^3\text{-}(Rf^3)_a\text{-}C(Rf^1)(Rf^2)\text{-}OH$ *wherein* X^1 *and* X^2 *are the same or different and each is H or F;* X^3 *is H, F, Cl or* CF_3 ***(at least one of*** X^1***,*** X^2 ***and*** X^3 ***is H and*** X^1***,*** X^2 ***and*** X^3 ***are not H at the same time)****;* Rf^1 *and* Rf^2 *are the same or different and each is a perfluoroalkyl group having 1 to 20 carbon atoms;* Rf^3 *is a fluorine-containing alkylene group having 1 to 40 carbon atoms or a fluorine-containing alkylene group having ether bond which has 1 to 100 carbon atoms and the sum of carbon atom and oxygen atom of two or more;* ***a is 0 or 1****.*

The fluorine-containing monomers described in independent ***Claims 2 and 5*** *relate to the species claims of Claim 1 since it is within elected* ***Species (2) for*** $a = 1; X^1 = X^2 = H, X^3 = F$. *See other limitations of dependent* ***Claims 7 and 9-10.***

6. Claims 1-2, 5, 7 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adelman (US 3,444,148) or Inomata et al. (JP 05-238988 A), each individually in view of Araki et al. (US 5,986,150) for the reasons set forth in paragraphs **5-8** of office action dated 1-26-2006 as well as the discussion below.

7. **Applicants**: Applicants have now claimed in three independent **Claims 1, 2 and 5** (with elected **Species (2) for** $a = 1; X^1 = X^2 = H, X^3 = F$) an unexpected way of producing a fluorinated monomer with a general formula (1a) as $CX^1X^2=CX^3-(Rf^3)_a-C(Rf^1)(Rf^2)-OH$, a formula (2) or (3) specified from formula (1a), respectively as well as its copolymer obtained therefrom. The key point is that Thechemical structure of such a hydroxyl-containing fluorinated monomer carries **a combination of factors** as: (A) at least one of X^1, X^2 and X^3 is H, while X^1, X^2 and X^3 are not H at the same time, (B) Rf^3 is a bivalent fluorine-containing alkylene or oxyalkylene group, (C) a can be 0 or 1, and (D) Rf^1 and Rf^2 are the same or different perfluoroalkyl group.

The Applicants allege that **"unexpected" results can be achieved** from such a fluoropolymer in comparing with other conventional fluoropolymers having hydroxyl or other functional group(s) (see page 9 middle of Remarks).

8. Although Applicants have agreed that Adelman or Inomata may have already disclosed at least two monomers including **$\underline{CH_2=CH-CH_2-}C(CF_3)_2-OH$** and **$\underline{CH_2=CH-(CH_2)_n-}C(CF_3)_2-OH$**, secondary reference Araki still cannot fix the deficiency of Adelman or Inomata as follows:

Firstly, Araki only discloses monomers with X^2 end group in his formula being only a primary alcohol or an epoxide-containing moiety (see page 9 bottom of Remarks; also see formula in Araki's abstract). No tertiary fluoroalcohol is disclosed or suggested.

Secondly, Applicants argue that Araki cannot teach related monomers having a fluorine-containing alkaline group at the 3-position corresponding to Rf^3 of present Claim 1.

Thirdly, monomers from Adelman "148" and Inomata "988" carrying $CH_2=CH-CH_2-$ and $CH_2=CH-(CH_2)_n-$ moiety are used to make copolymer so as to enhance both compatibility (with acrylonitrile due to fluorine content) and dyeability (from the presence of fluoroalcohol). The key point is that **all references in combination or alone cannot recognize the advantage by using the combination of both $\underline{CH_2=CF-Rf-}$ moiety and the claimed tertiary fluoroalcohol.** Such a polymerizable moiety is thereby not functionally equivalent and interchangeable accordingly.

A hindsight reconstruction may be used. In summary, the motivation to link is thereby missing for 103 rejection.

9. **Examiner**: Current three Parent **Claims 1, 2 and 5** are all involved in **using the combination of CH_2=CF-Rf- moiety and the claimed fluoroalcohol** to prepare a fluorinated monomer so as to obtain some advantages or unexpected results (as Applicants alleged) from its polymers in comparing with other conventional fluoropolymers having hydroxyl or other functional group(s). However, excellent result or advantage may be routine and in some cases is not necessarily to be unexpected result according to MPEP rule.

In a close examination, such unexpected results or advantages are not included at all inside parent claims. The Examiner understands that monomers as disclosed by references may be close to, but are not fully reading on the structure of the claimed monomer. It is also known in the art that even the difference is only one carbon atom in the monomer composition and/or on the functional group, the final polymeric products can be with very much different properties.

10. With respect to Applicants' key and first argument on "Araki's monomer has X^2 as end group being only a primary alcohol or an epoxide-containing moiety", attention is directed to the fact that monomers from Araki, Adelman, Inomata and current applications are all with the same hydroxyl-containing functional groups. The Examiner believes the current focus is a matter of efficiency. Therefore, Applicants may need to show the "criticality" why only the tertiary claimed fluoroalcohol is used.

With respect to Applicants' second argument on "Araki cannot teach related monomers having a fluorine-containing alkaline (alkylene???) group at the 3-position corresponding to the bivalent Rf^3 of present Claim 1", attention is directed to the fact that Araki uses bivalent groups with either perfluorinated alkylene or perfluorinated oxyalkylene. For perfluorinated oxyalkylene bivalent groups, please see formula in abstract and the monomers on column 13, line 26–column 16, line 56; for perfluorinated alkylene groups, please see column 17, lines 1-33.

With respect to Applicants' third argument on "CH_2=CH-CH_2- and CH_2=CH-$(CH_2)_n$- moiety are not functionally equivalent and interchangeable with CH_2=CF-Rf- moiety", attention is directed to the fact that Araki has already applied both **CH_2=CH-Y-** (see column 7, line 36-49) **and CH_2=CF-Y- type moieties, and has explicitly and implicitly shown that they are functionally equivalent and inter-exchangeable each other; while its linking group Y is starting with a carbon atom and it can be either fluorinated or non-fluorinated** (see column 6, line 20-32; column 13, line 30 – column 15, line 55; particularly see R in vinyl can be H or F, and Y can be alkyl, fluorinated alkyl or its alkoxy analogue group).

11. In a close examination, each of the two primary references is only silent about using the claimed monomeric moiety **CH_2=CF-Rf- in view of the elected Species (2) for a = 1; $X^1 = X^2$ = H, X^3 = F.** In light of the fact that all the involving references are preparing similar **functional** fluoropolymer having the same hydroxyl functional group, one having ordinary skill in the art would therefore have found it obvious to **synthetically** modify moieties such as **CH_2=CH-CH_2- and CH_2=CH-$(CH_2)_n$- in monomers** from Adelman "148" and Inomata "988"

by replacing it with a moiety of **CH_2=CF-Rf-** as taught by Araki. By this modification, one would still expect to succeed based on functional equivalence and interchangeability. Additionally, such obtained functional copolymers may be useful in obtaining excellent affinity with other heat-resisting thermoplastic resins.

With respect to pending Claims 1-2, 5, 7 and 9-10, all directly relate to the original Claims 1-2, 5, 7 and 9-10. Amendment is only on specification so as to correct the improper wording and/or chemical structure; all pending claims still carry exactly the same scope of original limitations. Therefore, the same rational recited in the rejection of original Claims 1-2, 5, 7 and 9-10 can be applied to reject current Claims 1-2, 5, 7 and 9-10. In summary, both 103 rejections relying on the use of Adelman or Inomata, each individually in view of Araki are thereby sustained due to current claim situation.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

June 13, 2006

DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700